

In re: Jin Ho Park
Serial No.: 09/884,487
Filed: June 18, 2001
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REMARKS

Applicant appreciates the courtesies that were extended to the undersigned by Examiner Piziali in a telephone interview on August 19, 2002. Although agreement was not reached at the interview, the interview provided the undersigned with insight into the Examiner's rationale for rejecting the claims. In response, the claims have been amended to eliminate reference to "external circuitry", because this language apparently created more issues than it resolved. Moreover, the claims have been amended to recite that the first and second DC output voltages are "output voltages of the multiple DC output voltage DC/DC converter". Patentability of these claims over the Farrington et al. reference will be described in detail below.

Independent Claims 10 and 14 are Patentable Over Farrington et al.

As amended, Claim 10 now recites:

10. (Three Times Amended) A multiple DC output voltage DC/DC converter comprising:
a transformer including a primary coil and a secondary coil that are coupled to one another by magnetic induction; and
a switch that is connected to the primary coil and that controls current switching therein;
wherein a first DC output voltage of the multiple DC output voltage DC/DC converter is generated from the primary coil and a second DC output voltage of the multiple DC output voltage DC/DC converter is generated from the secondary coil.

Applicant respectfully submits that Claim 10 is patentable over Farrington et al.

Figure 2 at least because:

(1) Farrington et al. describes a single DC output voltage DC/DC converter, not a multiple DC output voltage DC/DC converter, as repeatedly recited in Claim 10.

(2) Farrington et al. only produces a single output voltage, across the load resistor R_L of Figure 2, as indicated analogously in Farrington et al. Figure 1, by the output voltage V_0 .

(3) Conventional interpretation of a circuit diagram, such as Farrington et al. Figure 2, indicates that Farrington et al.'s DC/DC converter operates on a battery input voltage V_{IN} and produces an output voltage V_0 across a load, represented by a load resistance R_L . There is no suggestion in Farrington et al. that a first DC output

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voltage of a multiple DC output voltage DC/DC converter is generated from the primary coil, and a second DC output voltage of the multiple DC output voltage DC/DC converter is generated from the secondary coil.

(4) The interpretation set forth by the Official Action is contrary to the plain meaning of a circuit diagram. In particular, in a circuit diagram, an input voltage generally is placed at the left, and an output voltage at the right. The sole input voltage in Farrington et al. Figure 2 is the input battery V_{IN} and the sole output voltage of Farrington et al. Figure 2 is across the load resistor R_L . The capacitors C_{IN} clearly are input filter capacitors, and do not represent a first DC output voltage of a multiple DC output voltage DC/DC converter.

(5) Although Figures 6 and 7 of the present application provide specific embodiments where the multiple output voltages are V_{ON} , V_{OFF} and V_{DD} for a liquid crystal display (LCD), the invention is not limited to LCDs.

For at least these reasons, Claim 10 and dependent Claims 11-13 and 17 that depend therefrom, are patentable over Farrington et al. Independent Claim 14 also patentable for at least these reasons. This analysis will not be repeated for the sake of brevity. Dependent Claims 15-16 and 18 are patentable at least per the patentability of independent Claim 14.

Many of the Dependent Claims are Separately Patentable

The dependent claims are patentable per the patentability of the independent claim from which they depend. Moreover, many of the dependent claims are separately patentable.

In particular, Claim 11 recites:

11. (Three Times Amended) A converter according to Claim 10 further comprising a first rectifier and a second rectifier, wherein the primary coil is connected between an input voltage and the switch, wherein the first rectifier is connected to the primary coil to generate the first DC output voltage of the multiple DC output voltage DC/DC converter therefrom and wherein the second rectifier is connected to the secondary coil to generate the second DC output voltage of the multiple DC output voltage DC/DC converter therefrom.

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In rejecting Claim 11, the Examiner refers to diode D_2 of Farrington et al. Figure 2. However, Figure 2 of Farrington et al. does not even include a diode D_2 . Rather, Farrington et al. Column 2, lines 57-59 states:

In order to open the transformer secondary winding during the resonant stage, the rectifiers $D1$ and $D2$ of the converter shown in FIG. 1 are replaced by switches $S3$ and $S4$. (Emphasis added.)

For at least these reasons, Claim 11 is separately patentable over Farrington et al. Claim 15 also is separately patentable for at least the same reasons, which will not be repeated for the sake of brevity.

Moreover, new Claim 17 is separately patentable. New Claim 17 recites:

17. (New) A converter according to Claim 10 further comprising:
an input voltage port that is connected to the primary coil to provide a DC input voltage to the primary coil.

Thus, new Claim 17 recites an input port separate from the first DC output voltage. Claim 17 thus precludes the input capacitor C_{IN} , the unlabeled inductor, the inductor L_M , and any other component of the input circuitry of Farrington et al.'s DC/DC converter of Figure 2 from being construed as a first DC output voltage of the multiple DC output voltage DC/DC converter. Accordingly, Claim 17 is separately patentable. Claim 18 also is separately patentable for at least the same reasons, which will not be repeated for the sake of brevity.

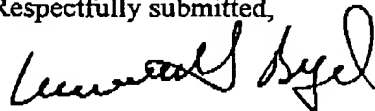
Conclusion

Applicant appreciates the Examiner's thorough examination and the insight that was provided in the telephone interview. However, Applicant respectfully submits that a conventional and standard interpretation of the cited art does not provide or suggest a multiple DC output voltage DC/DC converter, as recited in the independent claims, wherein a first DC output voltage of the multiple DC output voltage DC/DC converter is generated from a transformer primary coil and a second output voltage of the multiple DC output voltage DC/DC converter is generated from a transformer secondary coil. Moreover, many of the dependent claims are separately

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patentable. Accordingly, Applicants respectfully request allowance of the present application and passing the application to issue.

Respectfully submitted,



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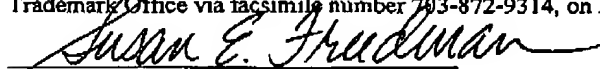


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VERSION WITH MARKINGS TO SHOW CHANGES MADE

The following is an addendum to the concurrently filed Amendment in response to the Official Action dated August 9, 2002 in the above-referenced application. This addendum includes a marked-up version of the changes made to the claims by the present Amendment.

In the Claims:

Claims 10-11 and 13-15 have been amended as follows:

10. (Three Times Amended) A multiple DC output voltage DC/DC converter comprising:

a transformer including a primary coil and a secondary coil that are coupled to one another by magnetic induction; and

a switch that is connected to the primary coil and that controls current switching therein;

wherein a first DC output voltage [for external circuitry] of the multiple DC output voltage DC/DC converter is generated from the primary coil and a second DC output voltage [for external circuitry] of the multiple DC output voltage DC/DC converter is generated from the secondary coil.

11. (Three Times Amended) A converter according to Claim 10 further comprising a first rectifier and a second rectifier, wherein the primary coil is connected between an input voltage and the switch, wherein the first rectifier is connected to the primary coil to generate the first DC output voltage [for external circuitry] of the multiple DC output voltage DC/DC converter therefrom and wherein the second rectifier is connected to the secondary coil to generate the second DC output voltage [for external circuitry] of the multiple DC output voltage DC/DC converter therefrom.

13. (Three Times Amended) A converter according to Claim 10 further comprising an inductor that is coupled across the primary coil, wherein the first DC output voltage [for external circuitry] of the multiple DC output voltage DC/DC converter is generated from the primary coil and from the inductor.

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14. (Three Times Amended) A multiple DC output voltage DC/DC converter comprising:

a transformer including a primary coil and a secondary coil that are coupled to one another by magnetic induction;

an inductor that is coupled across the primary coil; and

a switch that is connected to the inductor and that controls current switching therein;

wherein a first DC output voltage [for external circuitry] of the multiple DC output voltage DC/DC converter is generated from the inductor and a second DC output voltage [for external circuitry] of the multiple DC output voltage DC/DC converter is generated from the secondary coil.

15. (Three Times Amended) A converter according to Claim 14 further comprising a first rectifier and a second rectifier, wherein the inductor is connected between an input voltage and the switch, wherein the first rectifier is connected to the inductor to generate the first DC output voltage [for external circuitry] of the multiple DC output voltage DC/DC converter therefrom and wherein the second rectifier is connected to the secondary coil to generate the second DC output voltage [for external circuitry] of the multiple DC output voltage DC/DC converter therefrom.

Claims 17-18 have been added as follows:

17. (New) A converter according to Claim 10 further comprising:

an input voltage port that is connected to the primary coil to provide a DC input voltage to the primary coil.

18. (New) A converter according to Claim 14 further comprising:

an input voltage port that is connected to the primary coil to provide a DC input voltage to the primary coil.

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Attached is an Amendment for filing in U.S. Serial No. 09/884,487,
filed June 18, 2001 (Confirmation No. 2673).

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